

CLAIMS

1. Abrasive article, comprising:

- (a) at least about 30% of the total particulate volume is provided by abrasive particles, comprising particles of sintered sol gel alumina.
- (b) friable filler particles, and
- (c) a resinous bond in which the particles are mounted and held.

2. An abrasive article according to Claim 1 in which at least 10% of ^{the} volume of the abrasive particles in the article is supplied by sintered sol gel alumina particles.

3. An abrasive article according to Claim 2 in which at least 50% of ^{the} volume of the abrasive particles in the article is supplied by sintered sol gel alumina particles ~~as in Claim 2.~~

4. An abrasive article according to Claim 1 in which the sol gel alumina particles are seeded sol gel alumina particles.

5. An abrasive article according to Claim 1 in which up to 70% of the volume of the abrasive particles is provided by particles of fused or sintered alumina, silicon carbide, fused or sintered zirconia, fused or sintered alumina-zirconia, diamond or CBN.

6. An abrasive article according to Claim 1 in which the friable filler particles provide from about 20 to 70% of the volume of particulate matter in the article.

7. An abrasive article according to Claim 1 in which the friable filler particles are selected from hollow bubbles of a metal oxide, an organic polymer or a glass; friable particles of a silicate or alumina silicate; and foamed or solid glass or organic polymer particles.

1 8. An abrasive article according to Claim 1
 2 in which the friable filler particles are selected from
 3 aluminum oxide bubbles, zirconia oxide bubbles, glass
 4 bubbles, and vitrified alumina-silicate bubbles or
 5 pellets.

1 9. An abrasive article according to Claim 1 in
 2 which the resin bond is provided by a phenolic resin.

1 10. An abrasive article comprising:

2 (a) from about 50 to 90% by volume of the particulate
 3 content is provided by abrasive particles

4 (a) comprising from about 20 to about 95% of seeded sol gel
 5 alumina particles based on the volume of
 6 particulate matter in the article sintered;

7 (b) from about 20 to about 70% of alumina bubbles based
 8 the volume of particulate matter in the article; and
 9 a phenolic bonding resin.

1 11. An abrasive article according to Claim 10
 2 in which the sol gel alumina particles each comprise a
 3 multitude of crystallites having a diameter of from about
 4 0.4 micron, or less.

1 12. An abrasive article according to Claim 10
 2 in which up to about 80% by volume of the abrasive
 3 particles are provided by fused alumina particles.

1 13. An abrasive article according to Claim 10 in
 2 which the alumina bubbles have a mesh size of from about
 3 10 to about 200 mesh.

1 14. An abrasive article according to Claim 1 in
 2 the form of an abrasive wheel having a substantially
 3 uniform structure throughout.

1 15. An abrasive article according to Claim 10
 2 in the form of an abrasive wheel having a substantially
 3 uniform structure throughout.

1 16. An abrasive article according to Claim 10
 2 in the form of an abrasive wheel having a substantially
 3 uniform structure throughout.

- 1 17. A method of forming an abrasive article
2 which comprises:
3 A. forming a uniform mixture comprising:
4 (a) at least about 30% of the total
5 particulate volume is provided by
6 abrasive particles, comprising at
7 least about 30% of the total
8 particulate volume of particles of
9 sintered sol gel abrasive;
10 (b) ~~of~~ friable filler particles; and
11 (c) ~~of~~ a resinous bond in which the particles are
12 mounted and held;
13 B. shaping the mixture into that of the desired article;
14 and
15 C. curing the resin bond.

- 16 18. A method of forming an abrasive article
17 which comprises:
18 A. forming a uniform mixture comprising:
19 (a) abrasive particles comprising from about 20 to
20 about 80% of the volume of particulate matter
21 in the article of sintered, seeded sol gel
22 alumina particles;
23 (b) from about 20 to about 70% of the volume of
24 particulate matter in the article of alumina
25 bubbles; and
26 (c) a phenolic bonding resin.
27 B. shaping the mixture into the form of the desired
28 article; and
29 C. curing the resin bond.